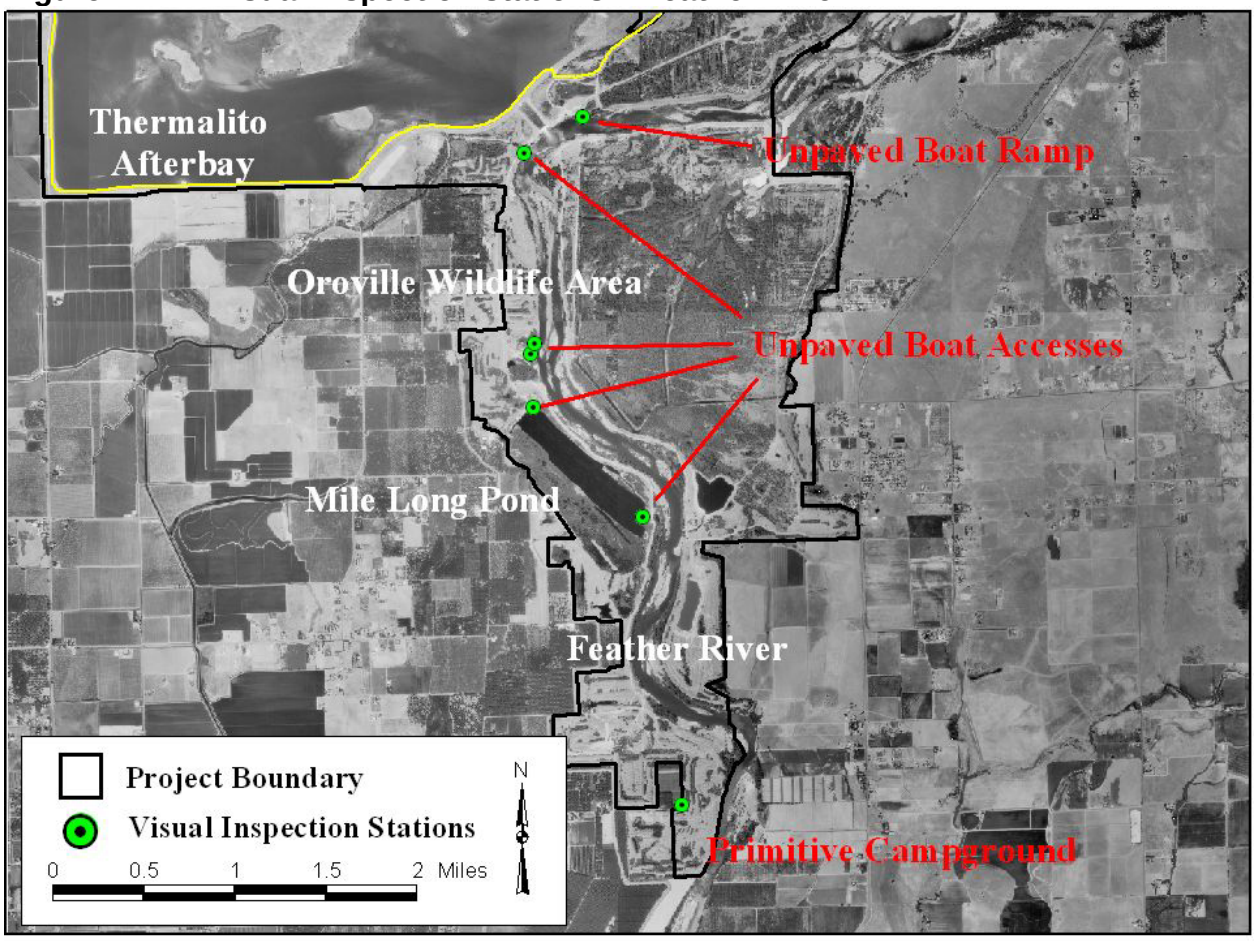
have an unpaved open area used for parking. These ramps are used primarily for fishing access to the nearby riffles.

Figure 4.1-7. Visual inspection stations – Feather River.



Two of the sites are unpaved cartop/small boat access ramps on Mile Long Pond, which primarily provide fishing access to Mile Long Pond. Neither of these boat access ramps is maintained by any agency. The boat access on the north end of Mile Long Pond is associated with the Mile Long Pond primitive camping area, with only portable toilets and small primitive campsites available within the camping area. There are no recreational facilities at the boat access at the southern end of Mile Long Pond. This ramp seems to serve as access to Mile Long Pond for small sailboats and other non-powered watercraft.

The last site is the primitive campground at the southern end of the Oroville Wildlife Area. This relatively large campground (approximately 75 acres) is surrounded by the levees of dredger spoils and has no permanent recreational facilities. Anglers fishing on the Feather River use this area as a parking area for their camper-top trucks for

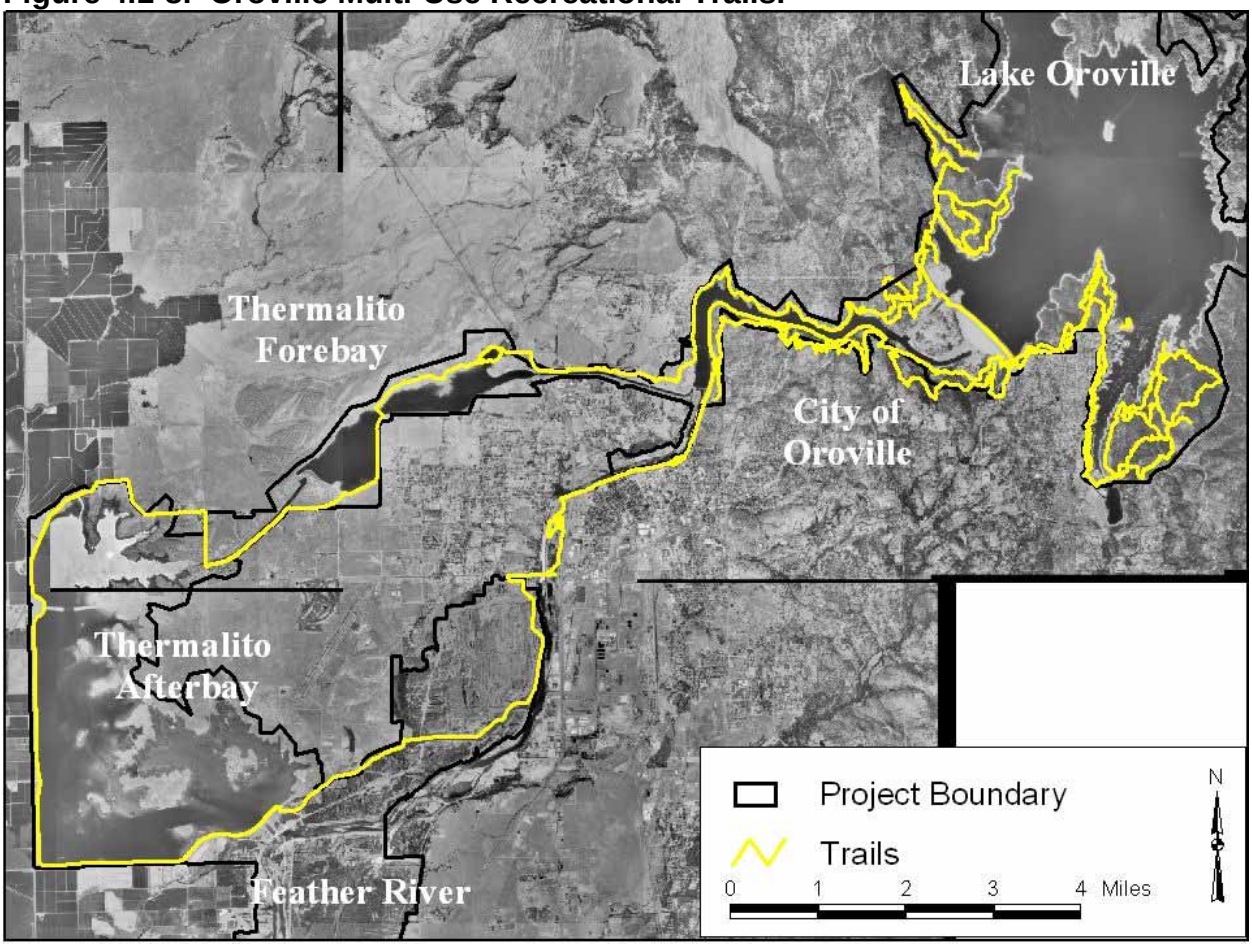
occasional overnight stays, though some anglers camp there longer. On a seasonal basis, CDFG puts trash barrels and portable toilets within this primitive campground.

There are seven interconnected multi-use trails totaling 88.5 miles in and around the Oroville Facilities (Table 4.1-5, Figure 4.1-8). The Brad Freeman Bike Trail is the longest portion of the trail system with 44.2 miles of trail, while the shortest is the Oroville Dam Visitor Center Trail with only 0.3 miles of trail. For these trails which closely follow Project waters, the most pertinent issue is erosion. Dirt trails, which are usually cut or lightly graded into native soil, can be a large source of sediment into Project waters. Surfacing of a trail, usually with gravel or paving, can lessen the amount of transportable sediment. Maintenance of both surfaced and unsurfaced trails can cause sediment transport to Project waters if proper sediment controls are not undertaken at the time of work and later when the rainy season commences. The trails associated with the Oroville Facilities were mapped into ArcView using a Garmin GPS and digitally ortho-rectified aerial photographs. Width and surface type of each segment were recorded.

Table 4.1-5 Oroville Multi-Use Recreational Trail

Trail	Total Length (miles)	Primary Use
Bidwell Bar Bridge	0.66	Hiking
Brad Freeman	44.2	Hiking/Biking/Horse
Dan Beebe	14.5	Hiking/Biking/Horse
Chaparral Loop	0.25	Hiking/Biking/Horse
Kelly Ridge	4.8	Hiking/Biking/Horse
Loafer Creek	13.8	
Campfire Center	0.5	Hiking
Day-Use Area	0.6	Hiking
Loafer Creek	3.2	Hiking/Biking/Horse
Loafer Creek Loop	3.9	Hiking/Biking/Horse
Roy Rogers	5.6	Hiking/Biking/Horse
Potter Ravine	10.0	
Dead Cow Ravine	1.2	Hiking/Biking
Potter Point	0.4	Hiking/Biking
Potter Ravine	8.4	Hiking/Biking
Visitors Center	0.3	Hiking
Total	88.5	

Figure 4.1-8. Oroville Multi-Use Recreational Trails.



4.2 WQ SAMPLING PROGRAM 2 – SWIM AREAS BACTERIA SAMPLING

The major potential contamination concern at public swim areas is fecal bacteria. Bacteria sampling had previously occurred under SP-W1 during the Labor Day holiday in 2002. Samples were taken five times in the thirty days around the holiday (including sampling on Labor Day). Results of this sampling show that high levels of total coliform bacteria were present from all of the sampled swim areas at some time during the month-long monitoring.

There are four developed swim areas within the Project area and one developed swim area adjacent to the Project area within the City of Oroville. Additionally, there are three undeveloped areas frequently used by the public in large numbers for swimming (Table 4.2-1). On the major summertime holidays (Memorial Day, Fourth of July, and Labor Day) the number of people utilizing Project waters increases dramatically. Swimming at the few developed swim beaches (North Thermalito Forebay, South Thermalito Forebay, Loafer Creek, and Monument Hill) is heavily dominated by families with

children. This raises the public health concern that bacteria levels at these beaches may increase far above normal background levels.

Table 4.2-1. Swim areas within and adjacent to the Project Area.

Facility	Managing Agency	Other Swimming-Related Services/Facilities Present
Bedrock Park	City of Oroville	Restrooms (permanent), adjacent picnic area
Loafer Creek RA	CDPR	Restrooms (permanent), swim showers, adjacent picnic area, campground
Monument Hill RA	CDWR	Restrooms (permanent), boat launch, adjacent picnic area, fish cleaning station
North Forebay RA	CDPR	Restrooms (permanent), swim showers, adjacent picnic area; overnight RV parking
South Forebay RA	CDPR	Restrooms (portable), adjacent picnic area; boat launch
Foreman Creek boat ramp	CDWR	Boat launch
Stringtown boat ramp	CDWR	Restroom, boat launch
Mile Long Pond	CDFG	Adjacent picnic area, restrooms (portable)

Two samples were taken from each site for the analyses of fecal and total coliform, fecal streptococcus, and enterococcus, and were collected monthly for the duration of the recreation season (June through September). In addition, bacteria samples were collected twice weekly from two weeks prior to two weeks following the Fourth of July holiday.

A total of eleven sampling stations were sampled among seven of the swim areas (Table 4.2-2). The undeveloped swim area at Mile Long Pond was not included in this study since it was being sampled under SP-W1. The Bedrock Park swim area, which is maintained by the City of Oroville, is formed by a small diversion from the Feather River around a near-shore sand and gravel bar. The downstream end of the diversion is partially blocked by a footbridge and culvert system to form the swim area. The swim area was sampled at the mouth of the small diversion upstream from the swim area and at the footbridge/culvert structure downstream from the swim area (Figure 4.2-1).

Table 4.2-2. Swim area bacteria sampling stations.

Swim Area	Water Body	Latitude/Longitude
Bedrock Park US - inlet	Feather River	N39° 30' 48.831" W121° 33' 57.866"
Bedrock Park DS - outlet	Feather River	N39° 30' 43.838" W121° 34' 10.138"
Loafer Creek RA at day-use area beach	Lake Oroville Bidwell Canyon Arm	N39° 32' 1.942" W121° 26' 38.318"
Monument Hill RA @ beach	Thermalito Afterbay	N39° 29' 29.814" W121° 40' 9.109"
North Forebay RA @ beach	Thermalito Forebay	N39° 32' 5.973" W121° 35' 15.773"
North Forebay RA @ north side of cove	Thermalito Forebay	N39° 32' 8.383" W121° 35' 19.674"
North Forebay @ mouth of cove	Thermalito Forebay	N39° 32' 0.164" W121° 35' 25.504"
South Forebay RA @ swim-area beach	Thermalito Forebay	N39° 30' 47.921" W121° 37' 19.060"
South Forebay RA @ boat ramp	Thermalito Forebay	N39° 30' 43.943" W121° 37' 11.958"
Foreman Creek boat ramp	Lake Oroville Main Body	N39° 35' 5.482" W121° 27' 3.022"
Stringtown boat ramp	Lake Oroville South Fork	N39° 31' 54.901" W121° 22' 7.580"

Figure 4.2-1a. Bedrock Park swim area (Feather River).

Figure 4.2-1b. Features of the Bedrock Park swim area (Feather River).

The Loafer Creek day-use swim area is within the Loafer Creek Recreation Area at the mouth of Loafer Creek at Lake Oroville on the east side of the Bidwell Arm. The swim area at Loafer Creek was sampled at the beach swim area only, since Loafer Creek itself does not flow during the summer (Figure 4.2-2).

The Monument Hill swim area is on a small cove on the south Thermalito Afterbay just off State Highway 162. This swim area has permanent restrooms, a picnic area, a boat launch, and a fish cleaning station (Table 4.2-1). The swim area was sampled only at the beach area (Figure 4.2-3).

The North Forebay swim area is one of the most highly developed swim areas within the Project, with large parking areas for day-use and overnight recreational vehicle parking, permanent bathrooms with shower facilities, and picnic areas (Table 4.2-1). This swim area is considered by CDPR to be the most popular and heavily used swim area in the Project area (Woody Elliot, CDPR, pers. comm.). The swim area is in a relatively deep cove off the upstream end of the Thermalito Forebay. The mouth of the cove faces downstream and is relatively narrow to ensure that the swim area remains warm for swimming. Water depths range from about six to ten feet in the cove. Wildlife use, especially by waterfowl, is very heavy in the cove. The North Forebay swim area

Figure 4.2-2a. Features of the Loafer Creek RA swim area, (Lake Oroville at Loafer Creek).

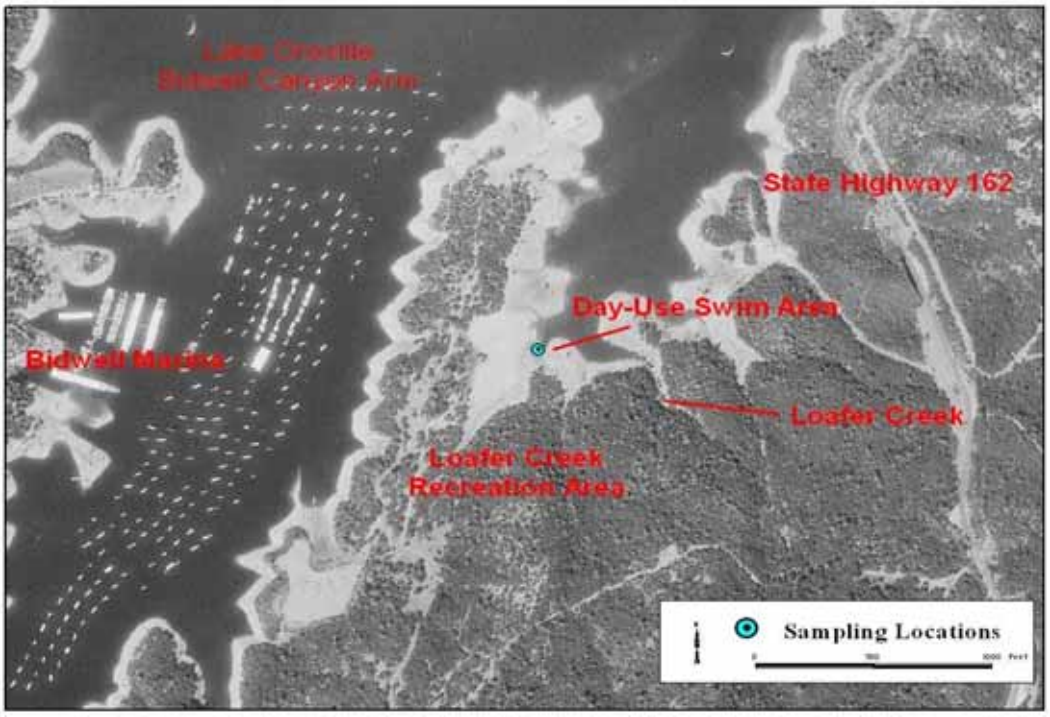


Figure 4.2-2b. Loafer Creek RA swim area (Lake Oroville at Loafer Creek).

Figure 4.2-3a. Features of the Monument Hill swim area, (south Thermalito Afterbay).

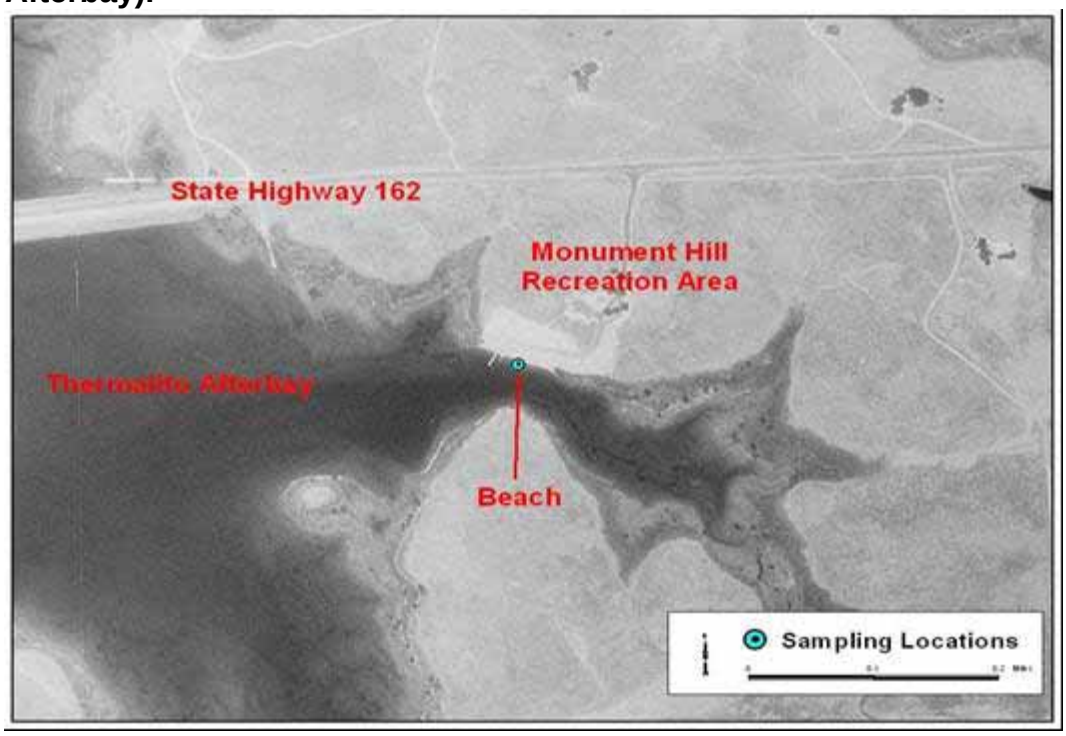


Figure 4.2-3b. Monument Hill swim area, (Thermalito Afterbay).

was sampled at the sandy beach area, the mouth of the cove, and a small cove north of and adjacent to the beach area (Figure 4.2-4).

The South Forebay swim area is on the upstream (eastern) end of a small peninsula adjacent to the Thermalito Forebay Power Plant Dam, and is associated with a boat launch, picnic area, fish cleaning station, and portable restrooms (Table 4.2-1). The South Forebay swim area was sampled at the designated beach area and at the associated boat launch where swimming often occurs (Figure 4.2-5).

The two undeveloped swim areas are primarily shallow areas associated with small-boat/cartop ramps at Foreman Creek and Stringtown. The Foreman Creek boat launch is at the mouth of Foreman Creek on the northern shore of the main body of Lake Oroville. This area does not have any facilities (i.e., restrooms, picnic areas, etc.), but is reported to be very popular during the summer and on major holidays with local residents (Figure 4.2-6). The Stringtown swim area is at the end of Stringtown Road on the southern shore of the South Fork Arm of Lake Oroville. The undeveloped swim area is primarily a shallow area adjacent to the small boat launch (Figure 4.2-7). There is a restroom associated with the boat launch for use by the swimmers. These two undeveloped swim areas were each sampled at one site within the shallow swim areas.

Figure 4.2-4a. Features of the North Forebay RA swim area (Thermalito Forebay).

Figure 4.2-4b. North Forebay RA swim area: Beach (Thermalito Forebay).

Figure 4.2-4c. North Forebay RA swim area: Mouth (Thermalito Forebay).

Figure 4.2-4d. North Forebay RA swim area: Cove (Thermalito Forebay).

Figure 4.2-5a. Features of the South Forebay RA swim area (Thermalito Forebay).

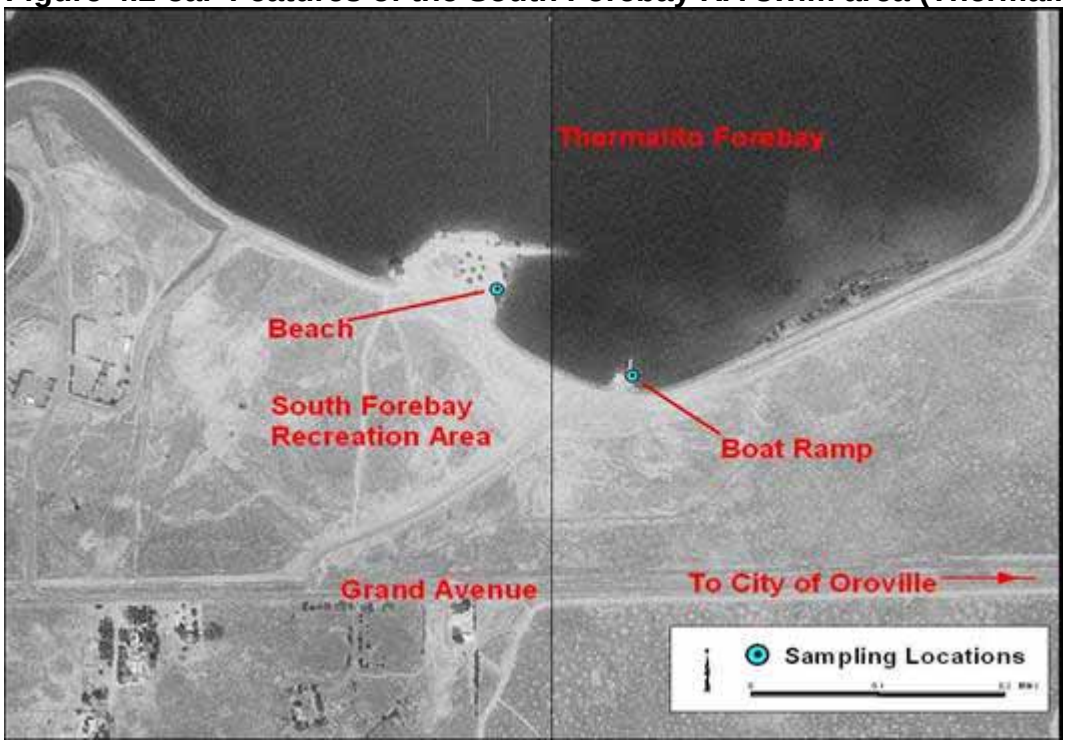


Figure 4.2-5b. South Forebay RA swim area: Beach (Thermalito Forebay).

Figure 4.2-5c. South Forebay RA swim area: Boat ramp (Thermalito Forebay).

Figure 4.2-6a. Features of the Foreman Creek boat ramp/access (Lake Oroville).

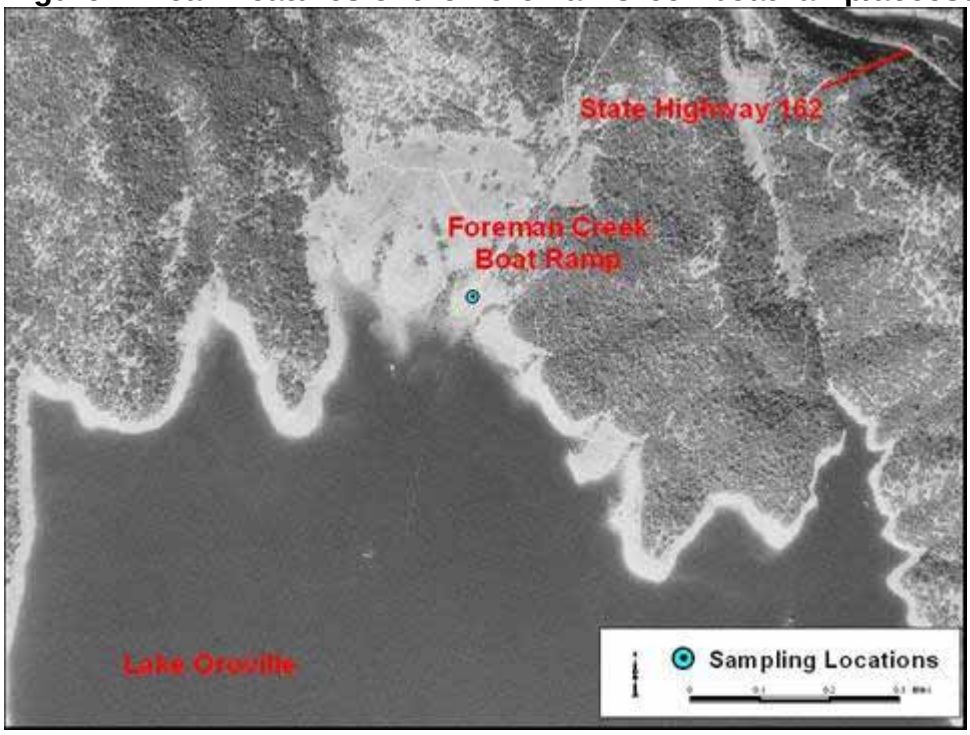


Figure 4.2-6b. Foreman Creek boat ramp/access (Lake Oroville).

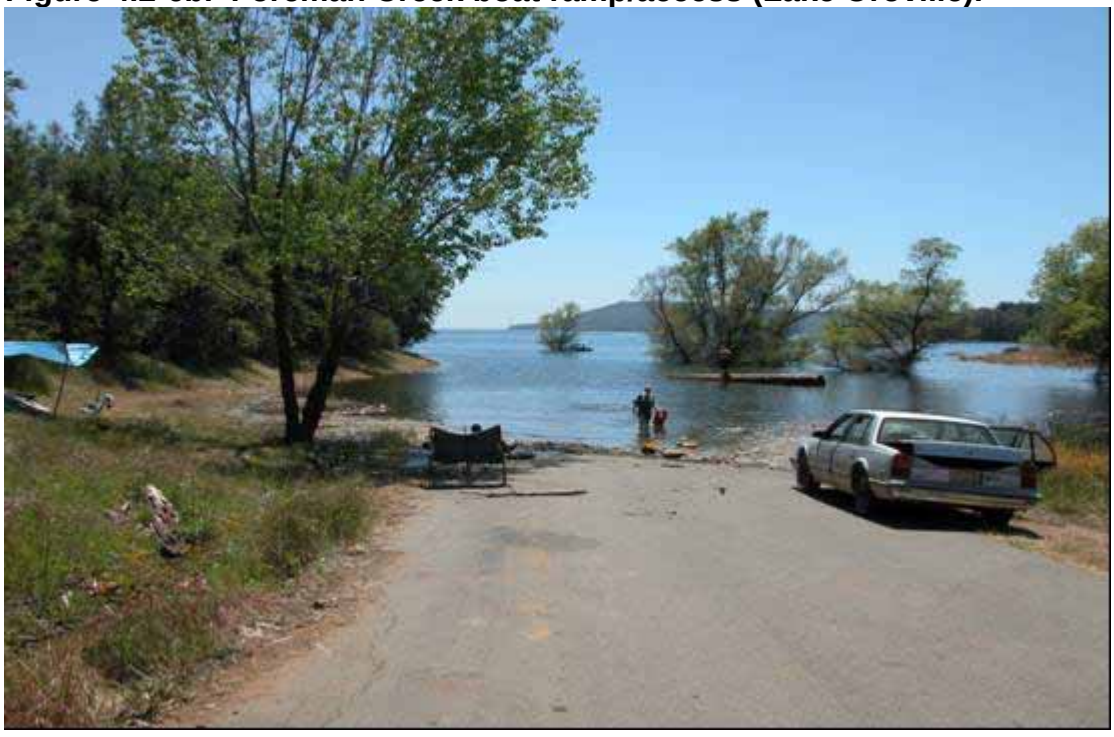


Figure 4.2-7a. Features of the Stringtown boat ramp/access (Lake Oroville South Fork).

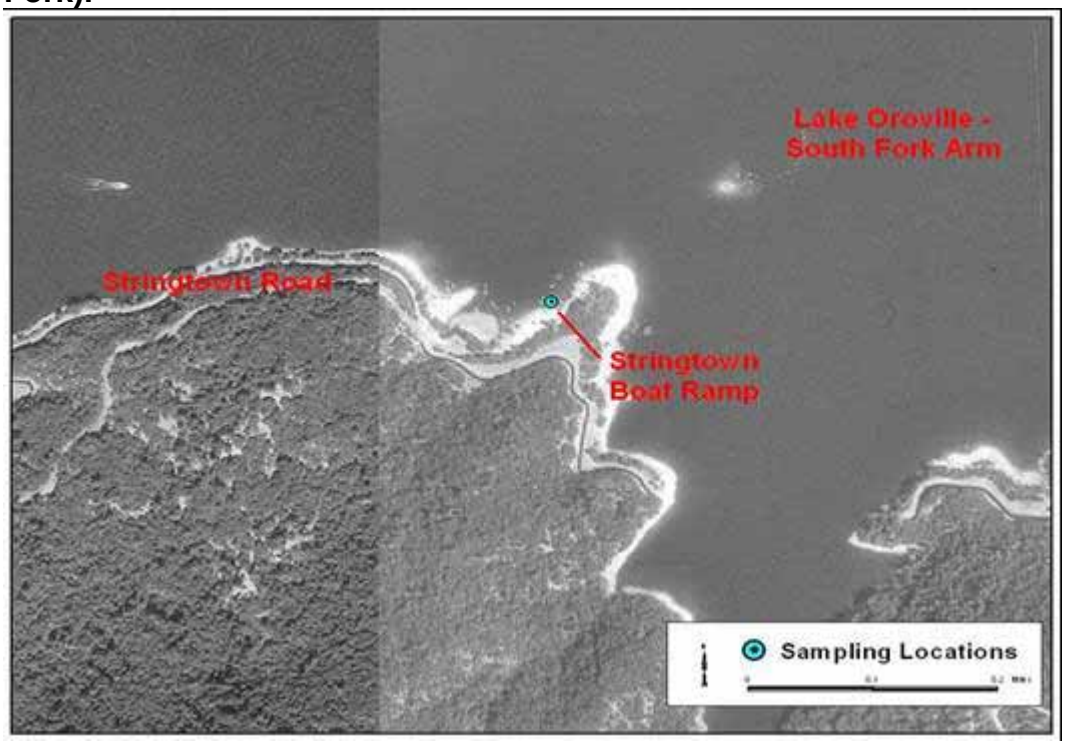
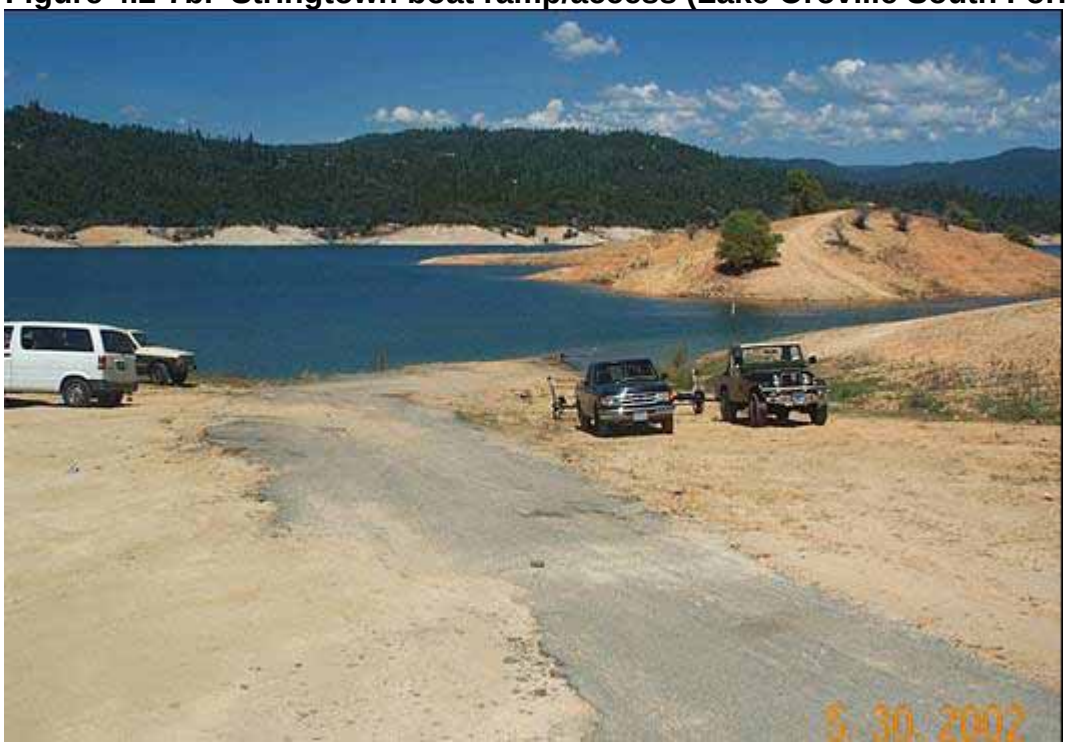


Figure 4.2-7b. Stringtown boat ramp/access (Lake Oroville South Fork).



4.3 WQ SAMPLING PROGRAM 3 – FISHING TOURNAMENT SAMPLING

One of the concerns raised by the Environmental Work Group was the potential contamination impact from the increased boat traffic during the weekends and numerous fishing tournaments, thus leading to a chance of increased input of petroleum byproducts to Project waters. To address this concern, water quality sampling for petroleum byproducts was performed during two fishing tournaments at the Spillway boat ramp on the day of the tournament and during two weekends at the Bidwell Canyon boat ramp and marina.

The schedule of upcoming tournaments for Lake Oroville was acquired from CDPR, which issues permits for fishing tournaments on Lake Oroville. The most popular staging area for Lake Oroville fishing tournaments is the Spillway boat ramp. Since the Spillway boat ramp is near the mouth of a small cove, one sampling station was located at the boat ramp within the cove and one was located outside of the cove as a control (Table 4.3-1; Figures 4.3-1 and 2). The control was deemed necessary to rule out the potential impact of possible ambient petroleum byproducts that could be already in Project waters. Three sampling stations were selected for the weekend water quality monitoring at Bidwell Canyon, again with a control station outside of the Bidwell Canyon Arm (Table 4.3-1; Figures 4.3-1 and 3).

Sampling at the Spillway boat ramp was performed immediately following morning departure (usually at first safe light) and afternoon return of boats. At Bidwell Canyon, samples were taken in the mid-afternoon. Samples were taken for the analyses of MTBE, polynuclear aromatic hydrocarbons, and aromatic hydrocarbons. Chemical analyses were performed by the Sequoia Analytical Laboratory in Sacramento, California.

Table 4.3-1. Fishing tournament/weekend sampling stations.

Sampling Site	Latitude/ Longitude
Spillway boat ramp - cove	N39^{o} 32’ 56.898” W121^{o} 29’ 36.840”
Spillway boat ramp - control	N39^{o} 32’ 44.559” W121^{o} 29’ 30.125”
Bidwell Canyon boat ramp	N39^{o} 32’ 19.004” W121^{o} 27’ 23.694”
Bidwell Canyon marina	N39^{o} 32’ 41.804” W121^{o} 27’ 23.066”
Bidwell Canyon boat ramp - control	N39^{o} 32’ 1.936” W121^{o} 27’ 17.533”

Figure 4.3-1. Fishing tournament and weekend sampling sites.

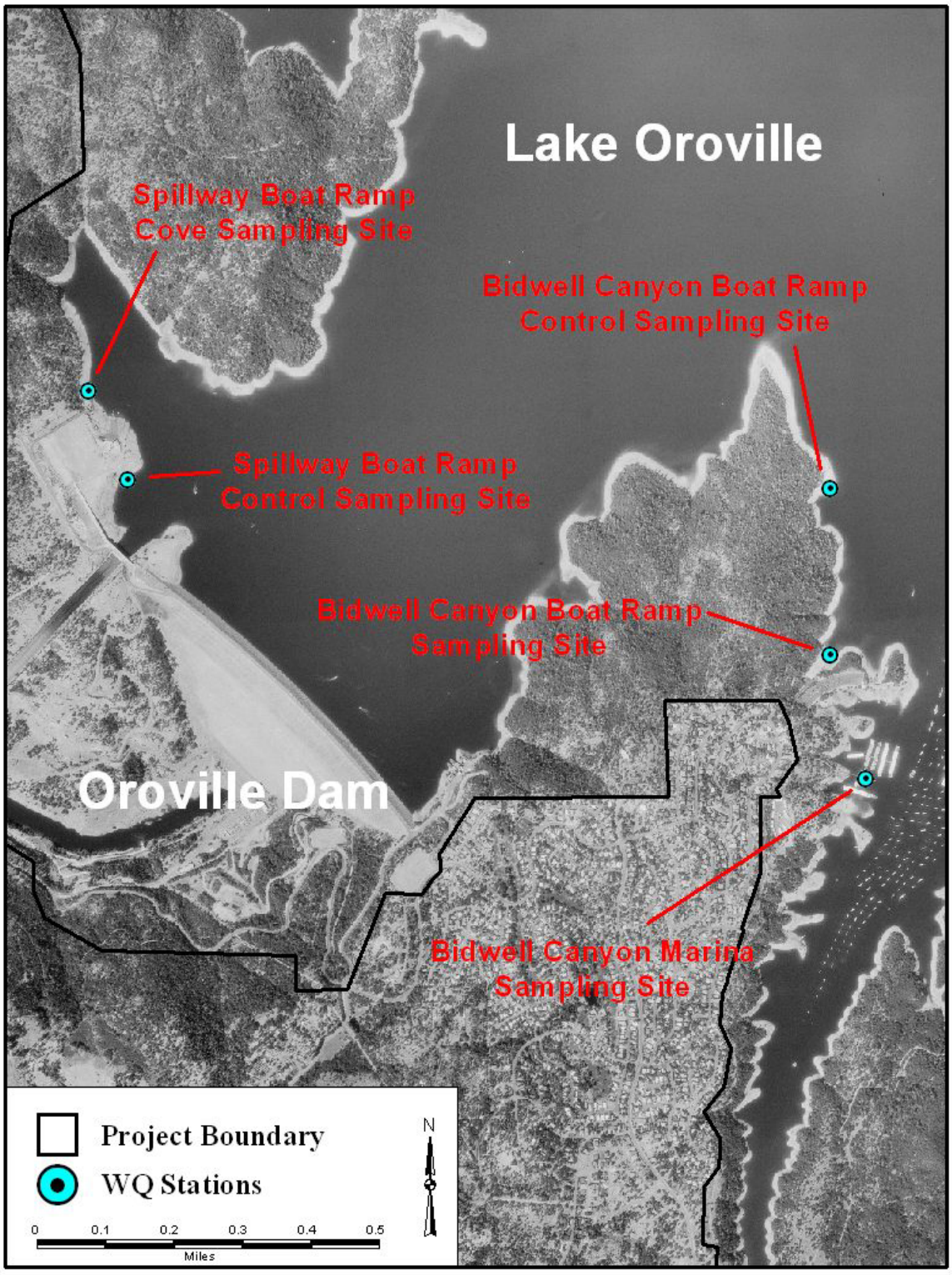


Figure 4.3-2. Spillway Boat Ramp.

Figure 4.3-3. Bidwell Canyon Boat Ramp.